

AD-A032 890

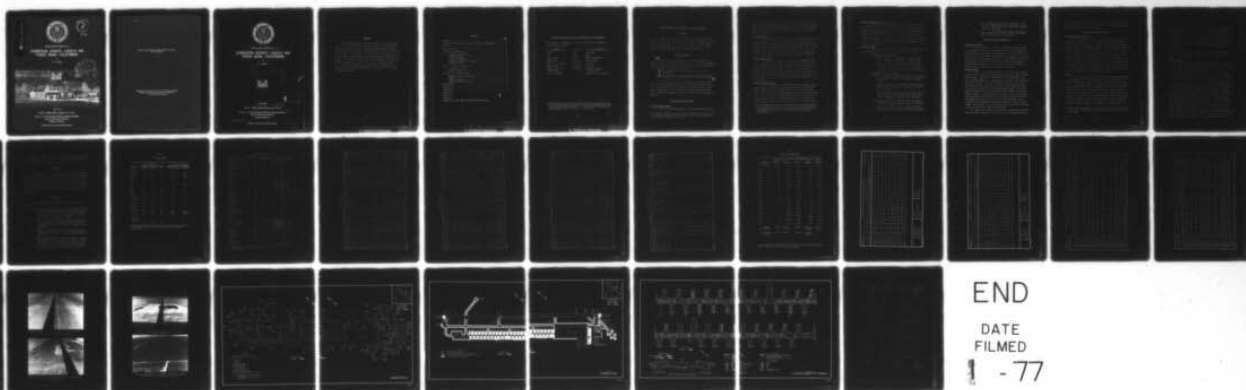
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG MISS F/G 1/5
CONDITION SURVEY, CASTLE AIR FORCE BASE, CALIFORNIA.(U)
APR 73 P J VEDROS

UNCLASSIFIED

WES-MP-S-73-19

NL

1 of 1
ADA032890



END

DATE
FILMED
1 - 77

ADA 032890



C2
NA

MISCELLANEOUS PAPER S-73-19

CONDITION SURVEY, CASTLE AIR FORCE BASE, CALIFORNIA

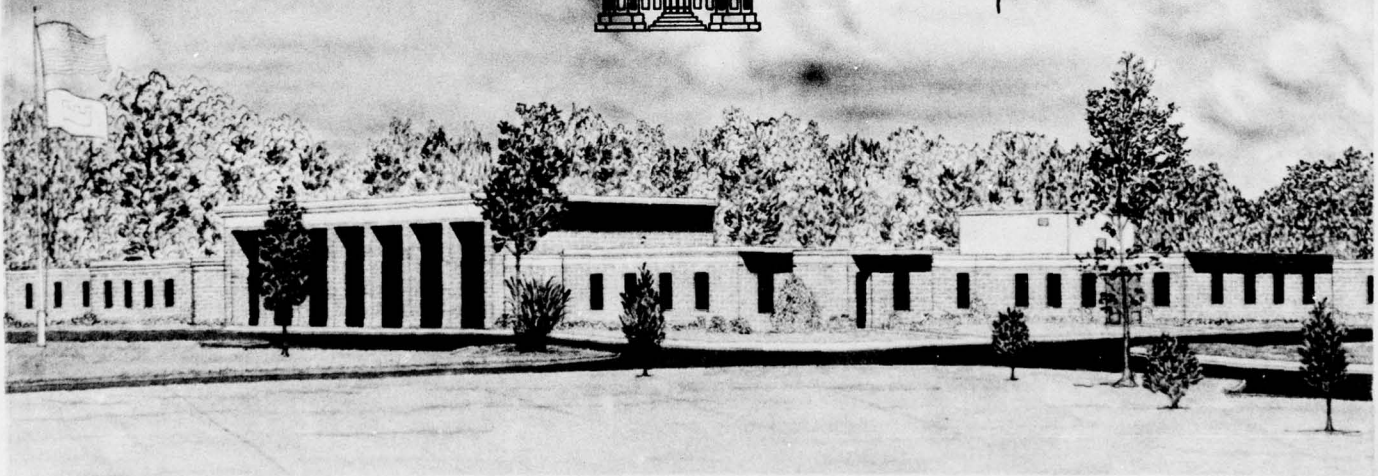
by

P. J. Vedros

COPY AVAILABLE TO DDC DOES NOT
PERMIT FULLY LEGIBLE PRODUCTION



DDC
RECEIVED
DEC 3 1976
C



April 1973

Sponsored by Office, Chief of Engineers, U. S. Army

Conducted by U. S. Army Engineer Waterways Experiment Station
Soils and Pavements Laboratory
Vicksburg, Mississippi

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

Destroy this report when no longer needed. Do not return
it to the originator.

The findings in this report are not to be construed as an official
Department of the Army position unless so designated
by other authorized documents.



9 MISCELLANEOUS PAPER S-73-19 ✓

6 **CONDITION SURVEY, CASTLE AIR
FORCE BASE, CALIFORNIA**

by

10 P. J. Vedros

14 WES-MP-S-73-19



APPROVED BY	
NTIS	<input checked="" type="checkbox"/>
DTIC	<input type="checkbox"/>
UNCLASSIFIED	<input type="checkbox"/>
JUSTIFICATION	
BY	
EXTENSION/AVANCE BY CODE	
DATE	
A	

11 April 1973

12 37p.

Sponsored by Office, Chief of Engineers, U. S. Army

Conducted by U. S. Army Engineer Waterways Experiment Station ✓
Soils and Pavements Laboratory
Vicksburg, Mississippi

ARMY-MRC VICKSBURG, MISS

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

038 100
bgr

Foreword

The study reported herein was conducted under the general supervision of the Engineering Design Criteria Branch, Soils and Pavements Laboratory, of the U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi. Personnel involved in the condition survey were Messrs. P. J. Vedros, S. J. Alford, and P. S. McCaffrey, Jr. This report was prepared by Mr. Vedros under the general supervision of Messrs. J. P. Sale, R. G. Ahlvin, and R. L. Hutchinson of the Soils and Pavements Laboratory. Appendix A was obtained from the Air Force.

COL Ernest D. Peixotto, CE, was Director of the WES during the conduct of the study and preparation of the report. Mr. F. R. Brown was Technical Director.

Contents

	<u>Page</u>
Foreword	iii
Conversion Factors, British to Metric Units of Measurement	vii
Authority	1
Purpose and Scope	1
Pertinent Background Data	1
Location and topography	1
Geology and soils	2
Climatic conditions	2
Drainage and water table	2
General description of airfield	3
Previous reports	3
History of Airfield Pavements	4
Construction history	4
Traffic history	4
Conditions of Pavement Surfaces	5
Pavement inspection procedure	5
Runway	5
Primary taxiways	6
Aprons and alert facilities	7
Maintenance	8
Evaluation	9
Conclusions	9
Tables 1-6	
Photos 1-6	
Plates 1-3	
Appendix A: CAFB Annual Pavement Maintenance Plan	

Conversion Factors, British to Metric Units of Measurement

British units of measurement used in this report can be converted to metric units as follows:

<u>Multiply</u>	<u>By</u>	<u>To Obtain</u>
inches	2.54	centimeters
feet	0.3048	meters
square inches	6.4516	square centimeters
square yards	0.8361274	square meters
miles (U. S. statute)	1.609344	kilometers
pounds (mass)	0.45359237	kilograms
pounds (force) per square inch	0.6894757	newtons per square centimeter
Fahrenheit degrees	*	Celsius or Kelvin degrees

* To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use the following formula: $C = (5/9)(F - 32)$. To obtain Kelvin (K) readings, use: $K = (5/9)(F - 32) + 273.15$.

CONDITION SURVEY, CASTLE AIR FORCE BASE, CALIFORNIA

Authority

1. Authority for conducting condition surveys at selected airfields is contained in amendment to FY 1972 RDTE Funding Authorization (MFS-MC-5, 16 February 1972), subject: "Air Force Airfield Pavement Research Program," from the Office, Chief of Engineers, U. S. Army, Directorate of Military Construction, dated 18 February 1972.

Purpose and Scope

2. The purpose of this report is to present the results of a condition survey performed at Castle Air Force Base (CAFB), California, during 8-10 November 1972. The following two major areas of interest were considered in this condition survey:

- (1) The structural condition of the primary airfield pavements.
- (2) The condition of pavement repairs and the types of maintenance materials that have been used at this airfield.

3. This report is limited to a presentation of visual observations, discussion of these observations, and pertinent remarks with regard to the performance of the pavements. No physical tests of pavements, foundations, or patching materials were performed during this survey. The annual pavement maintenance plan for CAFB is presented in Appendix A.

Pertinent Background Data

Location and topography

4. CAFB is located approximately 8 miles* northwest of the town

* A table of factors for converting British units of measurement to metric units is presented on page vii.

of Merced, California, in the San Joaquin Valley. To the east of the base are the Sierra Nevada Mountains and to the west is the Coast Range. The airfield has a nearly uniform slope toward the southwest which provides good surface drainage. The elevation of the airfield is 170 ft above mean sea level.

Geology and soils

5. The foundation or natural grade at the airfield represents the present stage of erosion of the older terraces of the Merced River, which flows in a westerly direction some 7 miles north of CAFB. The subgrade soils are composed of relatively uniform silty to clayey sands, which are classified as SM-SC material according to the Unified Soil Classification System.* The subgrade materials are predominantly non-plastic silty sands that tend to increase in plasticity with depth.

Climatic conditions

6. The airfield is located in an area having a semihumid climate, characterized by hot summers, mild winters, and light rainfall. The temperatures reach an average maximum of about 97 F during the summer months and an average minimum of about 35 F during the winter months. The average annual rainfall is about 11 in., the majority of which occurs during the winter months. Climatic data for the area, extracted from U. S. Weather Bureau records for Merced, California, are shown in table 1.

Drainage and water table

7. Shallow flooding of the general area from seasonal overflowing of streams of the Sierra Nevada Mountains has been alleviated by the construction of canals and levees off the base and ditches and storm drains on the base. The groundwater elevation, even after a wet winter, is about 15 ft below ground surface due to the free draining characteristics of the base and subgrade materials. A perched water table, generally overlying hardpan, is present in some local areas.

* U. S. Department of Defense, "Unified Soil Classification System for Roads, Airfields, Embankments, and Foundations," Military Standard MIL-STD-619B, June 1968, U. S. Government Printing Office, Washington, D. C.

General description of airfield

8. In November 1972, the pavement facilities at CAFB consisted of a NW-SE (12-30) runway, a parking apron, an operational apron, two warm-up aprons, stub parking aprons, a SAC alert facility, an ADC facility, connecting taxiways, a calibration hardstand, a washrack, and hangar access aprons. The runway is 300 ft wide and 11,800 ft long, and the aprons are of various sizes. A layout of the airfield is shown in plate 1. A pavement plan indicating the type of pavement on each facility is shown in plate 2.

Previous reports

9. Previous reports concerning CAFB are listed below. Pertinent data were extracted from them for use in this condition survey.

a. Condition survey reports.

- (1) Ohio River Division Laboratories, CE, "Report of Rigid Pavement Condition Survey, Castle Air Force Base, California," March 1956, Cincinnati, Ohio.
- (2) _____, "Condition Survey Report, Castle Air Force Base, California," March 1959, Cincinnati, Ohio.
- (3) _____, "Condition Survey Report, Castle Air Force Base, California," May 1963, Cincinnati, Ohio.

b. Pavement evaluation reports.

- (1) U. S. Army Engineer District, Sacramento, CE, "Report on Evaluation of Carrying Capacities of Airfield Pavements, Merced, California," May 1944, Sacramento, California.
- (2) _____, "Report on Evaluation of Carrying Capacities (Addendum No. 1) Merced Army Air Field (Castle Field), Merced, California," November 1946, Sacramento, California.
- (3) U. S. Army Engineer District, San Francisco, CE, "Airfield Pavement Evaluation, Report No. 3, Firing-in-Butt Facility, Castle Air Force Base, Merced, California," January 1958, San Francisco, California.
- (4) _____, "Airfield Pavement Evaluation, Report No. 4, ADC Facility, Castle Air Force Base, Merced, California," January 1958, San Francisco, California.
- (5) _____, "Airfield Pavement Evaluation, Report No. 5, ADC Facility, Castle Air Force Base, Merced, California," January 1958, San Francisco, California.

- (6) U. S. Army Engineer District, San Francisco, CE, "Airfield Pavement Evaluation, Report No. 6, Castle Air Force Base, Merced, California," May, 1958, San Francisco, California.
- (7) _____, "Airfield Pavement Evaluation, Report No. 7, Castle Air Force Base, Merced, California," March 1960, San Francisco, California

History of Airfield Pavements

Construction history

10. The construction of CAFB was initiated in June 1941, under the supervision of the Corps of Engineers. Details of the design and construction history of the airfield pavements (extracted from the reports referenced in paragraph 9) are presented in table 2. As is noted in table 2, the north parking apron, which was constructed in 1956, and the pavements constructed in 1957 and 1959 are the only pavements at CAFB that were designed for B-52 operations. Pavement thicknesses, descriptions, and other details are presented in table 3.

Traffic history

11. CAFB was originally designated as a training base, and the initial traffic operations consisted almost entirely of small, trainer-type aircraft. Following the construction of the NW-SE runway, the field was used primarily as a training base for B-29, B-50, and smaller-type bomber aircraft. B-29 and B-50 traffic continued at the base until about May 1954, when B-47 and KC-135 aircraft began operations. Use of the B-52 aircraft for training operations began in June 1955. Selected traffic data for the period June 1955-December 1971 are presented in table 4. The average takeoff weights for the B-52 aircraft ranged from about 350,000 to 380,000 lb for the period 1955-1967 and from about 402,000 to 435,000 lb for the period 1968-1971. About 90 percent of the takeoffs occur from the southeast (30) end of the runway. At the time of this survey there were approximately 35 flights a day (B-52 and KC-135) being flown from CAFB.

12. Traffic data from the 1963 condition survey report show that about 590 alert operations by B-52 aircraft were performed during the

period April 1959-July 1962. Traffic records for the period 1965-1970 indicate that only KC-135 aircraft (a total of 196 operations) were involved in the practice alert exercises.

Conditions of Pavement Surfaces

Pavement inspection procedure

13. The following procedure was used in conducting the pavement inspection of the rigid pavements. Representative features were selected for detailed inspection. The features were then inspected slab by slab,* and the defects were recorded. The locations of the individual pavement features, the inspection starting points, and the directions in which the pavements were inspected (shown by arrows) are indicated in plate 1. The results of the rigid pavement survey for those features inspected in detail are presented in table 5. This table shows a quantitative breakdown of the various types of defects and a condition rating for each pavement feature inspected in detail. The procedures used for determining the condition rating of a pavement are given in Appendix III of Department of the Army Technical Manual TM-5-827-3, "Rigid Airfield Pavement Evaluation," dated September 1965.

Runway

14. At the southeast (30) end of the runway, there were a number of major defects that had occurred in the rigid overlay (10-in. over 11-in. portland cement concrete (PCC)) pavement since the last survey in 1962. Of the major defects observed in the first 400 ft of this end (features R1A and R7D), only one occurred in the 18-in. PCC pavement. In the next 800 ft of the southeast end (features R2A, R3B, and R4C), which consists of 18-in.-thick PCC, 8, 13, and 26 percent of the slabs contained a major defect. All of these defects occurred in the center 100-ft-wide portion of the runway. The asphaltic-concrete (AC) pavement in the interior portion of the runway (sta 22+00 to 118+00) was in very good condition. The area from sta 22+00 to 50+25 and from

* A slab is the smallest unit, containing no joints, of a given pavement feature.

sta 77+00 to 118+00 had been heater-planed and overlaid in 1969 due to roughness of the surfaces, and the repair appears to have corrected the problem. The AC surface near the edges of the runway (photo 1) contained a considerable number of shrinkage cracks. The 18-in.-thick PCC pavement of the first 1000 ft of the northwest (12) end was in excellent condition, with no more than 3 percent of the slabs containing a major defect. The predominant defects on the runway pavement were longitudinal and transverse cracks. A summary of the runway defects is presented in table 5.

15. From an operating standpoint, the removal of deposits of rubber left on the runway by the tires of landing aircraft still constitutes a problem and must be done yearly.

Primary taxiways

16. The primary taxiways at CAFB are taxiways 1, 2, 3, 9, 10, and 11. Taxiway 1, which parallels the runway, consists of both flexible and rigid pavements. The rigid section (feature T2A), which is adjacent to the northeast edge of the operational apron, consists of 18-in. PCC over an old flexible pavement. This section of pavement was in excellent condition, with only about 3 percent of the slabs containing major defects (see photo 2). The flexible pavement portion of taxiway 1 was in fair condition, with evidence of some slight roughness in the pavement surface (photo 3). Very little cracking was apparent in the surface; however, about 25 ft of the center section of this taxiway near the northwest end of the runway has been reworked and resealed (photo 4). There were also areas on the taxiway that had been patched. Although the AC section (feature T19A) adjacent to the rigid section on the southeast end had been repaired, there were signs that roughness was developing again. Taxiway 2 (features T1A, T3A, and T4A) was rated from excellent to poor or failed in this survey. The 21-in. PCC portion of taxiway 2 (feature T3A), which was originally the north parking apron taxiway, was in excellent condition, with no major defects recorded. The portion of taxiway 2 (feature T4A) that was originally designated taxiway 50 west and that consists of 18-in.-thick PCC pavement over an old flexible pavement was in excellent condition, with only

about 2 percent of the slabs containing a major defect. Taxiway 2 (feature T1A) consists of 11-in. PCC pavement in which slabs that have failed have been replaced with 21-in.-thick PCC pavement. The center two lanes of this feature are in poor to failed condition with just about every 11-in.-thick slab containing at least one major defect. Maintenance records obtained from the Base Civil Engineer show that approximately 127 slabs in the center two lanes have been replaced since 1963. Approximately 25 percent of these new slabs were observed during this survey to contain a major defect. A layout of the slab replacements on taxiway 2 and the stub parking aprons is shown in plate 3. A number of the slabs are replaced nearly every year (as funds are made available). A typical cross section indicating the type of slab replacement is also shown in plate 3.

17. Taxiways 9 and 10 were constructed partly of flexible pavement and partly of 11-in. PCC (plate 1). The 11-in. PCC was generally in the same condition as that found in taxiway 2. The flexible pavement portion of the taxiways had some longitudinal cracking and rutting in the B-52 wheel paths (photo 5). Taxiway 3 (to the SAC alert area), which consisted of 20-in.-thick PCC was in excellent condition with no major defects observed.

Aprons and alert facilities

18. Approximately 30 percent of the slabs in the operational apron were inspected in detail, and the results of this limited survey are presented in table 5. The entire apron was not surveyed because planes were parked in almost every parking slot. A comparison of the results for the area surveyed with the results of the surveys performed in 1958 and 1962 for the same area indicates that there has been an increase in cracking in some of the 16-in. pavement, particularly in the taxiing area along the southwest edge of the apron near the washrack. There are a number of slabs in this area that have deteriorated to a shattered condition. A cursory survey of those areas where the aircraft were parked indicated the pavement condition had not changed to any extent since the 1958 and 1962 surveys. Approximately 33 percent of the slabs in the operational apron contained a major defect. The areas in

which these defects were located were along the western and southwestern edges of the apron.

19. The south warm-up apron (10-in. over 11-in. PCC) was in excellent condition, with only about 4 percent of the slabs containing a major defect. The yellow stripe for taxiing to the southwest end of the runway was painted across this apron so all aircraft use this area for takeoffs. The north warm-up apron (18-in. PCC pavement) was also in excellent condition, with about 9 percent of the slabs containing a major defect.

20. The SAC alert aprons and taxiway (features A6B and T6B) were in excellent condition, with no major defects recorded. The north parking apron (feature A2B) was not inspected in detail because of parked aircraft; however, the 17-in. PCC pavement appeared to be in excellent condition.

21. The parking stubs were generally considered to be in a poor to failed condition in those areas where the 11-in.-thick pavement is still being used. A number of slabs in the center lanes of the stubs have been replaced with 21-in. PCC (photo 6). Very few defects were found in the replaced slabs of the stubs that were inspected (Nos. 12-19).

Maintenance

22. Maintenance of CAFB has consisted of joint sealing, spall repairs, slab replacement, slurry seals, rubber removal, and asphalt overlays. Heater-planing and overlaying AC sections of the runway and taxiways were last performed in 1969. The concentration of maintenance effort has been on the 11-in. PCC pavements, which are showing the greatest distress. This work has generally consisted of crack sealing and the replacement of the more distressed slabs as funds are made available. Crack sealing in the 16-in. PCC pavements in the operational apron is presently being performed; however, it will be necessary in the near future to replace some of the more distressed slabs. A copy of the annual maintenance plan for this airfield was obtained from the Air Force

and is presented as Appendix A. This plan indicates the type and amount of maintenance and repair that have been performed through November 1972 as well as that which is proposed for the future.

Evaluation

23. The latest evaluation report for this airfield was prepared in 1960 (see paragraph 9b). Because some changes in gear configurations and methods of evaluation have been made since that time, a new evaluation table (table 6) has been prepared. The physical properties of the materials as indicated in the past reports have been used for determining the load-carrying capabilities. Where the conditions of the pavements indicate a need for modification, the load-carrying capacity has been adjusted.

Conclusions

24. The following remarks summarize the findings of the 1972 inspection:

- a. The 11-in. PCC pavements are presently carrying the loads of the B-52 aircraft operating at the base but are severely cracked and distressed. A considerable number of the 11-in. slabs in the center two lanes of taxiway 2 and in the center lanes of the parking stubs have been replaced with 21-in.-thick PCC pavement.
- b. There has been an increase in cracking in some of the 16-in. PCC slabs of the operational apron to the extent that a number of the slabs are considered to be in a shattered condition and will have to be replaced in the near future.
- c. Removal of rubber deposits on the runway is a yearly maintenance problem; however, the pavements appear to be responding satisfactorily to methods of removal that are used.
- d. The flexible pavement on the runway interior and the primary taxiways has become rough from operations of B-52 aircraft; however, heater-planing to level the surface and overlaying seem to have corrected the problem on the runway. Some areas of the taxiways have roughened again and are showing signs of rutting and grooving.

Table 1
Climatic Data*

Month	Average Daily Temperature, F			Average Precipitation	
	Maximum	Minimum	Mean	Rainfall, in.	Snowfall
January	55	35	45	2.3	--
February	61	39	50	1.9	Trace
March	66	41	54	1.9	Trace
April	74	45	60	1.0	--
May	82	51	67	0.5	Trace
June	90	55	73	0.1	--
July	97	61	79	0.0	--
August	95	59	77	0.2	--
September	90	54	72	0.2	--
October	79	47	63	0.5	--
November	67	39	53	1.2	--
December	56	36	46	1.9	--
Annual	76	47	62	11.7	Trace
No. of Years of Record	51	51	78	81	21

* Extracted from U. S. Weather Bureau records for Merced, California.

Table 2
Airfield Construction History

Pavement Facility	Pavement		Construction		Design Criteria
	Thickness In.	Type	Year(s)	Agency	
Operational apron	4	AC	1941-42	CE	Overlaid or reconstructed at later date
NW-SE runway			1943-46	CE	
Sta 10+00 to 14+00	11	PCC			
Sta 14+00 to 77+00	3	AC			
Sta 77+00 to 80+00	11	PCC			
Taxiway 1			1943-46	CE	
Sta 14+00 to 20+00	4	AC			
Sta 50+00 to 80+00	3	AC			
Taxiway 7	3	AC	1943-46	CE	
South warm-up apron	11	PCC	1943-46	CE	
NW-SE runway, sta 80+00 to 110+00	3	AC	1951	CE	Designed to match existing pavement, 75,000-lb wheel load
Taxiway 1, sta 80+00 to 110+00	3	AC	1951	CE	
Taxiways 8 and 11	3	AC	1951	CE	
Taxiways 9 and 10			1951	CE	
East 305 ft	3	AC			
West 385 ft	11	PCC			
Stub parking area	11	PCC	1951	CE	
NW-SE runway			1954	CE	
Sta 22+00 to 77+00	4	AC*			
Sta 77+00 to 110+00	3	AC*			
Hanger apron	14	PCC	1954	CE	250,000-lb gear load (quadricycle) 250,000-lb gear load (quadricycle) 100,000-lb dual-wheel load, 200-psi tire pressure
	4	AC			
Firing-in-butt			1954-55	CE	
Calibration handstand	14	PCC			
Taxiway	4	AC			
ADC facility			1954-55	CE	
Alert apron	10	PCC			
Alert hanger	10	PCC			
Operational apron	10	PCC			
Taxiways T1, T4, and T3	4	AC			
NW-SE runway			1955	CE	250,000-lb twin-dual wheel assembly
Sta 10+00 to 14+00	10	PCC*			
Sta 14+00 to 22+00	18	PCC**			
Sta 110+00 to 118+00	4	AC			
Sta 118+00 to 128+00	18	PCC			
North warm-up apron	18	PCC	1955	CE	
South warm-up apron	10	PCC*	1955		
Taxiway 1			1955	CE	
Sta 13+25 to 20+00	4	AC*			
Sta 50+00 to 80+00	4	AC*			
Sta 80+00 to 110+00	3	AC*			100,000-lb dual-wheel load, 200-psi tire pressure 125,000-lb dual-wheel load 125,000-lb dual-wheel load Designed to match existing pavement, 75,000-lb wheel load 100,000-lb dual-wheel load, 200-psi tire pressure 80,000-lb dual-wheel load 25,000-lb wheel load, 200-psi tire pressure 240,000-lb twin-twin gear assembly
Sta 110+00 to 128+00	4.25	AC			
Adjacent to north warm-up apron	4.75	AC			
Taxiways 9 and 10, east 305 ft	3	AC*	1955	CE	
Taxiway 7	4	AC*	1955		
Taxiways 8 and 11	3	AC*	1955	CE	
Operational apron			1955	CE	
Apron	16	PCC*			
Taxiway 50, west portion	18	PCC			
Taxiway 1, sta 20+00 to 50+00	18	PCC*			
Nose docks (9), stub parking area	11	PCC	1955	CE(8) AF(1)	25,000-lb wheel load, 200-psi tire pressure 240,000-lb twin-twin gear assembly
Nose docks (5), washrack area	16	PCC	1955	CE	
Washrack	14	PCC	1955	CE	
ADC facility			1955-56	CE	
Taxiway apron access	10	PCC			
Operational apron extension	10	PCC			
Access apron	10	PCC			
Readiness hanger	14	PCC			
North parking apron			1956	CE	
Apron	17	PCC			
Taxiway 2	21	PCC			25,000-lb wheel load, 200-psi tire pressure 265,000-lb twin-twin gear assembly
Nose docks (2)			1957		
Hanger area	18	PCC		AF	
Taxiway 2, east portion	18	PCC		CE	
ADC power check pad	10	PCC	1959	AF	
Alert stubs and taxiway 3	20	PCC	1959	CE	

Note: CE denotes Corps of Engineers, and AF denotes Air Force.
* Overlay pavement.
** Reconstructed pavement.

(2 of 4 sheets)

Table 1 (Continued)
SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY	FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA OR CONSIDERED
				THICK IN	DESCRIPTION	FLEX STH PSI	THICK IN	DESCRIPTION	FLEX STH PSI	THICK IN	CLASSIFICATION	CBR OR X	CLASSIFICATION	CBR OR X	
Facility A3B															
A3B	North ramp-up apron	1142	272				18	Portland cement concrete	600	6	Silty sand (20-25)	50	Silty sand (20-25)		Excellent
A3C	Taxiway 6	600	75				10	Portland cement concrete	600	6	Silty sand (20)	50	Silty sand (20)		Excellent
A3D	Taxiway 9 and 10; west halfway	305	100				11	Portland cement concrete	750	10	Silty sand (20)	50	Silty sand (20)		Good
A3E	Taxiway 9 and 10; east halfway	305	100				6	Asphaltic concrete		7	Sandy gravel (20)	100	Silty sand (20)	15	Fair
A3F	Taxiway 7	650	100					See Facility A3B and A3C							
A3G	Taxiway 8 and 11	800	100				6	Asphaltic concrete		7	Sandy gravel (20)	100	Silty sand (20)	15	Fair
A3H	Taxiway 9 west 11' ft	210	100				4	Asphaltic concrete		12	Silty sandy gravel (20)	60	Silty sand (20)	15	Fair
A3I	Runway	1502					14	Portland cement concrete	650	6	Silty sand (20)	275	Silty sand (20)		
A3J	Runway	275	84 and 75				16	Portland cement concrete	650	6	Silty sand (20)	275	Silty sand (20)		
A3K	Runway apron	600	310 and 312				5	Asphaltic concrete		8	Silty sandy gravel (20-25)	50	Silty sand (20)	15	
A3L	Runway floor	600	200				14	Portland cement concrete	750	18	Silty sand (20)	50	Silty sand (20)		
A3M	Runway (larger apron)	209	90				18	Portland cement concrete	650	6	Silty sand (20)	275	Silty sand (20)		
A3N	Runway (parking slab area)	88	22				11	Portland cement concrete	650	6	Silty sand (20)	275	Silty sand (20)		
A3O	Taxiway 5 and 12	730	75				4	Asphaltic concrete		5	Silty sandy gravel (20-25)	50	Silty sand (20)	10	
A3P	Runway	604	75							10	Silty sand (20)	50			
A3Q	Runway	200	50												
A3R	Runway apron	446	143				10	Portland cement concrete	750	9	Silty sand (20)	50	Silty sand (20)		
A3S	Runway apron	300	202.5 and 145.5				10	Portland cement concrete	750	6	Silty sand (20)	50	Silty sand (20)		
A3T	Runway apron	160	125				10	Portland cement concrete	750	6	Silty sand (20)	50	Silty sand (20)		
A3U	Runway apron	366	75 and 300				10	Portland cement concrete	750	9	Silty sand (20)	50	Silty sand (20)		

Table 3 (Continued)
SUMMARY OF PHYSICAL PROPERTY DATA

SHUTTLE AFB	FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
	FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK, IN	DESCRIPTION	FLEX STRENGTH PSI	THICK IN	DESCRIPTION	FLEX STRENGTH PSI	THICK IN	CLASSIFICATION	CBR STRENGTH %	CLASSIFICATION	CBR STRENGTH %	
	ADC alert hangar	136	68				10	Portland cement concrete	750	9	Silty sand (SM)	500	Silty sand (SM)		
	2252 ADC power check pad and taxiway	110 333	110 50				10	Portland cement concrete	750	6	Silty sand (SM)	350	Silty sand (SM)		
	Readiness hangar	118	172				14	Portland cement concrete	750	6	Silty sand (SM)	500	Silty sand (SM)		
	2292 Calibration hardstand taxiway	1600	75				4	Asphaltic concrete		6	Silty sandy gravel (SP-20)	100	Silty sand (SM)	50	
	4172 Calibration hardstand						14	Portland cement concrete	500	6	Silty sand (SM)	500	Silty sand (SM)		

Table 4
Selected Traffic Data

Year	Cycles of Operation				
	Medium Bomber	Heavy Bomber	Tanker	Heavy Cargo	All Others
1955 (Jun-Dec)	15	375	282	52	1,325
1956	40	1,825	1,120	260	6,831
1957	39	2,127	1,356	254	7,092
1958	52	2,418	1,933	225	8,728
1959	40	4,890	1,992	270	13,192
1960	46	2,641	2,308	293	10,455
1961	56	3,056	2,928	75	8,099
1962	8	3,000	3,948	30	4,980
1963	10	2,980	3,700	40	4,500
1964	11	2,989	3,500	49	4,350
1965	6	3,119	3,654	433	3,503
1966	1	3,073	3,089	579	3,126
1967	1	2,938	3,419	867	2,776
1968	1	3,102	4,680	549	2,506
1969	0	5,011	5,968	1,392	1,106
1970	0	3,482	5,054	548	1,215
1971	0	3,400	4,790	525	1,325
Avg takeoff weight, lb	160,000	365,000-415,000	240,000	175,000-275,000	7,000-70,000
Avg landing weight, lb	100,000	230,000	150,000	95,000-190,000	--

Note: Portions of traffic data are estimated.

Table 5

DATE:

November 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD:

Castle AFB

NO.	FEATURE	SLAB SIZE FT	APPROX NO. OF SLABS	PAVE. THICK IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS																% OF SLABS NO MAJOR DEFECTS	% OF SLABS NO CONDITION
					I	—	\	Δ	*	K	~	S	J	J	⊕	M	P	O	C	D		
11A	RW-SE runway, SE end; sta 10+00 to 12+1/2	12-1/2 by 12-1/2	66	10/11	3	4	1	3	3												90	90
11B	RW-SE runway, SE end; sta 11+00 to 15+00	25 by 25	48	18	3		2		1												87	87
11C	RW-SE runway, SE end; sta 15+00 to 20+00	25 by 25	240	18	13			1	1												90	90
11D	RW-SE runway, SE end; sta 20+00 to 22+00	25 by 25	96	18	9	21	1	1													74	74
11E	RW-SE runway, NW end; sta 123+00 to 128+00	25 by 25	240	18	6	5						2									97	97
11F	RW-SE runway, NW end; sta 118+00 to 123+00	25 by 25	240	18	1	2															99	99
11G	Taxiway 2, 2 center lanes	25 by 25	480	11 and 21	177	117	20	16	38	14			3								90	90
11H	Taxiway 2, 4 outside lanes	12-1/2 by 25	960	11	4	7		5					1								98	98
11I	Taxiway 2 extension	25 by 25	336	19														2			99	100
11J	Taxiway 2	25 by 25	248	18	2	1	1				1										98	98

REMARKS:

LEGEND:

I LONGITUDINAL CRACK
— TRANSVERSE CRACK
- DIAGONAL CRACK
Δ CORNER BREAK
* SHATTERED SLAB
K KEYED JOINT FAILURE

SHRINKAGE CRACK

SCALING

SPALL ON TRANSVERSE JOINT

SPALL ON LONGITUDINAL JOINT

CORNER SPALL

SETTLEMENT

MAP CRACKING

PUMPING JOINT

POP-OUT

UNCONTROLLED CONTRACTION CRACK

"D" CRACKING

(1 of 2 sheets)

WES FORM NO. 2004
JUN 1972

Table 5 (continued)

DATE: November 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD:

CRG12, NR

NO.	FEATURE	SLAB SIZE FT	APPROX NO. OF SLABS	PAVE THICK. IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS													% OF SLABS NO DEFECTS	% OF SLABS NO MAJOR DEFECTS	CONDITION					
					I	—	\	Δ	*	K	W	S	J	↓	J	Φ	M	P	O	C	D				
PA	Taxiway 1	25 by 25	976	10	9	24	1	4	3		2		3		4				1				96	97	Excel- lent
PB	Taxiway 3	25 by 20 25 by 25	376	20															2				99	100	Excel- lent
PC	SAC alert status A-0	25 by 25	240	20															3				99	100	Excel- lent
PD	Operational apron	25 by 25	1426	16	353	263	14	3	53		6		4						4				66	67	Fair
PE	South warm-up apron	12-1/2 by 12-1/2	1393	10/11	27	9	3	15	2		1			1	2				2	1			96	96	Excel- lent
PF	North warm-up apron	25 by 25	188	18	4	9					3									1			91	91	Excel- lent
PG	Taxiway 6	25 by 25	78	18					No Defects														100	100	Excel- lent

Table 6
SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS														REMARKS
DATE OF EVALUATION MONTH, November YR 1972			TRICYCLE ARRANGEMENT														
NO.	FEATURE DESIGNATION	PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIME PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 24-SQ-IN. CONTACT AREA	1x 26-IN. C-C 220-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 400-SQ-IN. CONTACT AREA EACH TIRE	1x 37-IN. C-C 287-SQ-IN. CONTACT AREA EACH TIRE	1x 46-IN. C-C 430-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33-IN. x 46-IN. 428-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	BICYCLE 3950 3742 37 2671 50-IN. CONTACT AREA EACH TIRE					
R1A	WW-SE runway; sta 10+00 to 14+00, west 250 ft	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	260,000	330,000+	380,000+	800,000+	400,000					
R2A	WW-SE runway; sta 10+00 to 14+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	260,000	330,000+	380,000+	800,000+	400,000					
R3B	WW-SE runway; sta 15+00 to 20+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	310,000	330,000+	380,000+	800,000+	420,000					
R4J	WW-SE runway; sta 20+00 to 22+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	560,000					
R8C	WW-SE runway; sta 22+00 to 30+00, center 200 ft	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	580,000					
R10C	WW-SE runway; sta 30+00 to 77+00, center 200 ft	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	560,000					
R14C	Sta 79+50 to 80+00, west 50 ft																
R12C	WW-SE runway; sta 77+00 to 80+00, center 200 ft	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	600,000+					
R15C	WW-SE runway; sta 80+00 to 100+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	400,000					
R16C	WW-SE runway; sta 100+00 to 110+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	500,000					

Note: + sign denotes allowable gross loading greater than maximum gross weight of any existing aircraft having indicated gear configuration.
(a) denotes allowable loading less than minimum gross weight of any existing aircraft having indicated gear configuration.

Note: + sign denotes allowable gross loading greater than maximum gross weight of any existing aircraft having indicated gear configuration.
(a) denotes allowable loading less than minimum gross weight of any existing aircraft having indicated gear configuration.

Table 6 (continued)
SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: Castle AFB		DATE OF EVALUATION MONTH, November YR. 1972		LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS												REMARKS	
NO.	FEATURE DESIGNATION	PAVEMENT OPERATIONAL USE	TRICYCLE ARRANGEMENT												BICYCLE		
			SINGLE 100 SQ IN. CONTACT AREA EACH TIRE	SINGLE 241 SQ IN. CONTACT AREA EACH TIRE	TR 2 IN. C-C 226 SQ IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 400 SQ IN. CONTACT AREA EACH TIRE	TR 3 IN. C-C 267 SQ IN. CONTACT AREA EACH TIRE	TR 4 IN. C-C 310 SQ IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	C-8A GEAR CONFIGURATION	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	
R17C	NW-SE runway; sta 110+00 to 118+00	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
R5A	NW-SE runway; sta 123+00 to 128+00	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
R6B	NW-SE runway; sta 118+00 to 123+00	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T17A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T15A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T2A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T4A	Taxiway 2	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T20A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T13C	Taxiway 7, south half	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T21A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T14C	Taxiway 7, north half	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T22A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T23A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T24A	Taxiway 1	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T3A	Taxiway 2	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	
T1A	Taxiway 2 (21-in. pave- ment)	Capacity	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	155,000+	

(2 of 3 sheets)

Table 6 (continued)

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: Castle AFB			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS														REMARKS
DATE OF EVALUATION MONTH: November YR: 1972			TRICYCLE ARRANGEMENT										BICYCLE				
NO.	FEATURE	PAVEMENT OPERATIONAL USE	SINGLE 100 SQ IN. CONTACT AREA	SINGLE 241 SQ IN. CONTACT AREA	TW 2IN. C-C 224 SQ IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 40 IN. SPACING 400 SQ IN. CONTACT AREA	TW 37 IN. C-C 267 SQ IN. CONTACT AREA EACH TIRE	TW 44 IN. C-C 630 SQ IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. x 46 IN. 208 SQ IN. CONTACT AREA EACH TIRE	C-54 GEAR CONFIGURATION	TWIN TWIN SPCG 3742.37 267 SQ IN. CONTACT AREA EACH TIRE						
	DESIGNATION		1	2	3	4	5	6	7	8	9	10					
TLA	Taxiway 2 (11-in. pavement)	Capacity	100,000	80,000	125,000	150,000	200,000+	145,000	205,000	285,000	800,000+	230,000					
T6B T7B ACB	Taxiways 3 and 4 and SAC alert stubs	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	600,000+					
ALB	South parking apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	285,000	330,000+	380,000+	800,000+	410,000					
ASB	Parking stubs (21-in. pavement)	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	600,000+					
ASB	Parking stubs (11-in. pavement)	Capacity	100,000	80,000	150,000	150,000	200,000+	175,000	235,000	340,000	800,000+	245,000					
ACB	North parking apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	300,000	330,000+	380,000+	800,000+	410,000					
A3B	South warm-up apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	450,000					
ALB	North warm-up apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	265,000	330,000+	380,000+	800,000+	400,000					
T5C	Taxiway 6	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	600,000+					
T5A TL0A	Taxiways 9 and 10, west halves	Capacity	100,000	80,000	125,000	150,000	200,000	145,000	205,000	285,000	800,000+	230,000					
TL1A TL2A	Taxiways 9 and 10, east halves	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	590,000					
TL5C TL6C	Taxiway 8 Taxiway 11	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	330,000+	380,000+	800,000+	600,000+					
TL7C	Taxiway 8, west 120 ft	Capacity	155,000+	85,000+	155,000	190,000	200,000+	295,000	320,000	380,000+	800,000+	480,000					



Photo 1. Condition of AC surface on edges of runway
at northwest end



Photo 2. Cracking in 18-in. PCC of taxiway 1



Photo 3. Flexible pavement portion of taxiway 1. Note resealed area adjacent to center line



Photo 4. Taxiway 1 at northwest end. Note birdbaths in upper part of photo

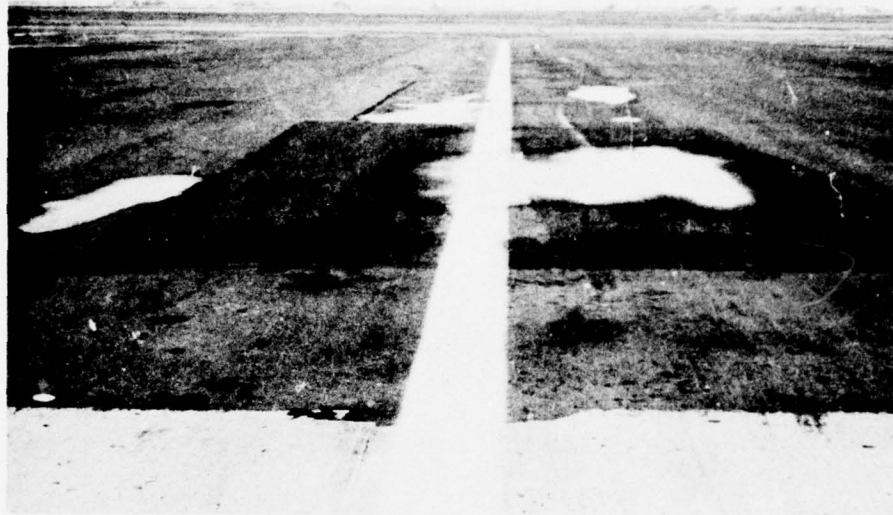
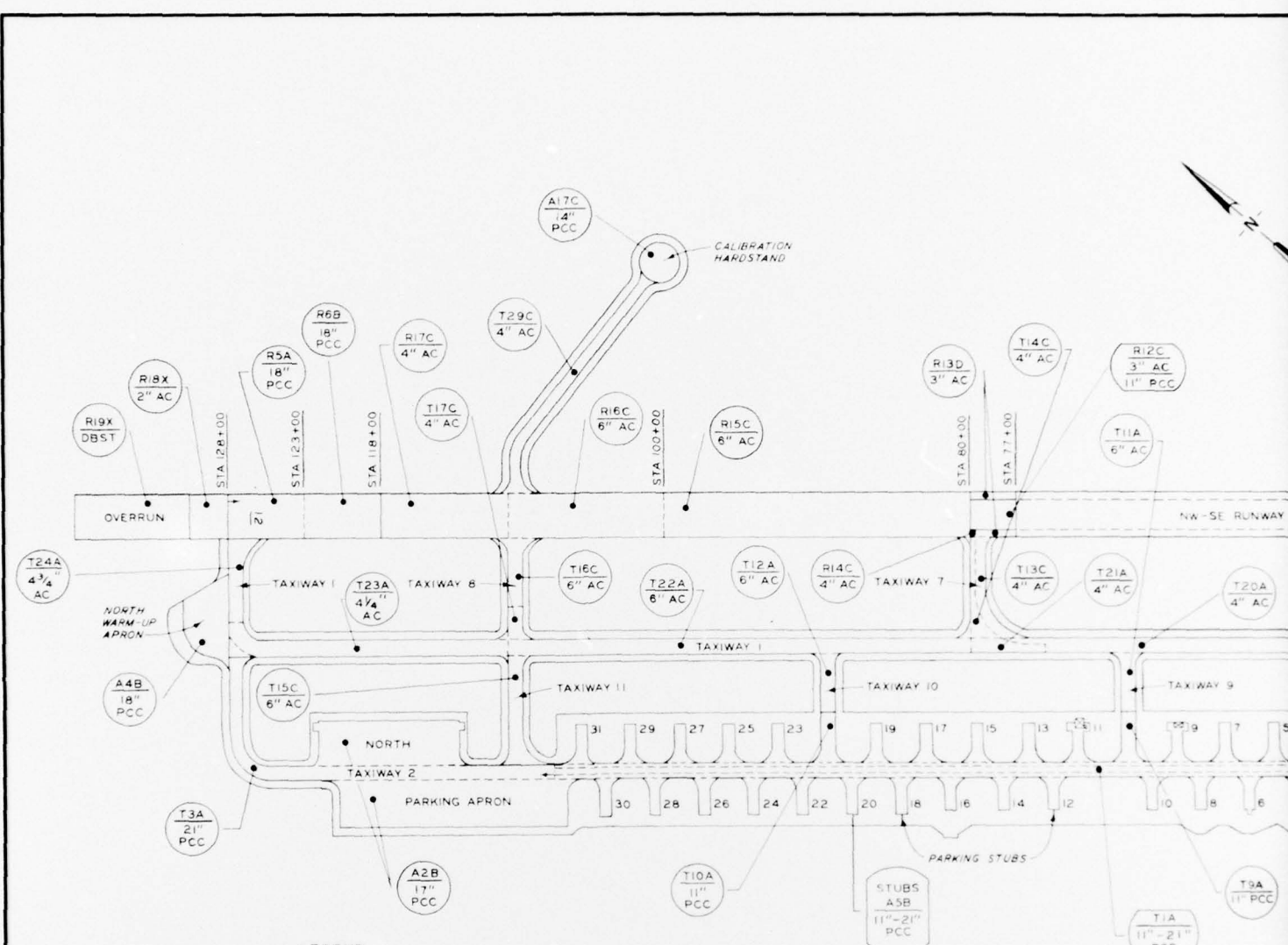


Photo 5. Densification in taxiway 10 in wheel paths
of B-52 aircraft



Photo 6. Replaced slabs in center of stub parking area.
Cracked pavement in foreground is 11-in. PCC



LEGEND

- R5A

 ← FEATURE DESIGNATION (SEE NOTE 1)
- 18" PCC

 ← SURFACE PAVEMENT THICKNESS AND TYPE

TYPE OF FEATURE

- R - RUNWAY
- T - TAXIWAY
- A - APRON

TYPE TRAFFIC AREA (SEE NOTE 2)

- A - A TYPE TRAFFIC AREA
- B - B TYPE TRAFFIC AREA
- C - C TYPE TRAFFIC AREA
- D - D TYPE TRAFFIC AREA
- X - NO TRAFFIC TYPE ASSIGNED

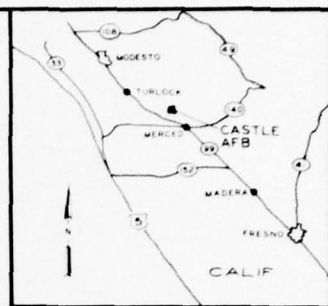
- AC - ASPHALTIC CONCRETE
- PCC - PORTLAND CEMENT CONCRETE
- DBST - DOUBLE BITUMINOUS SURFACE TREATMENT
- DIRECTION OF SURVEY

NOTES 1. FEATURE DESIGNATION DENOTES TYPES OF FEATURE, NUMBER OF FEATURE FOR GIVEN TYPE, AND TYPE OF TRAFFIC AREA.

2. TRAFFIC AREA DESIGNATIONS ARE BASED ON HEAVY LOAD CRITERIA.

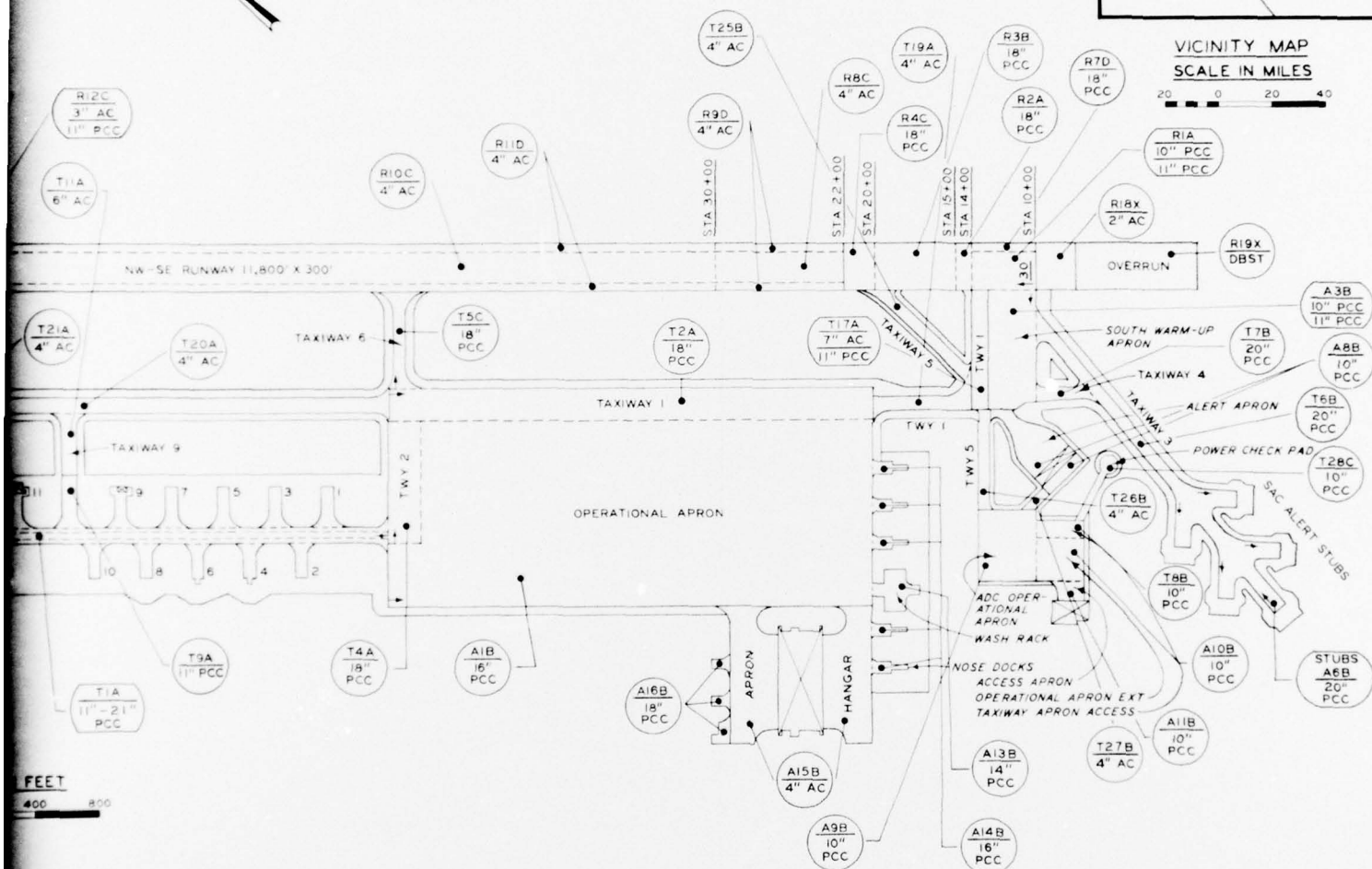
SCALE IN FEET





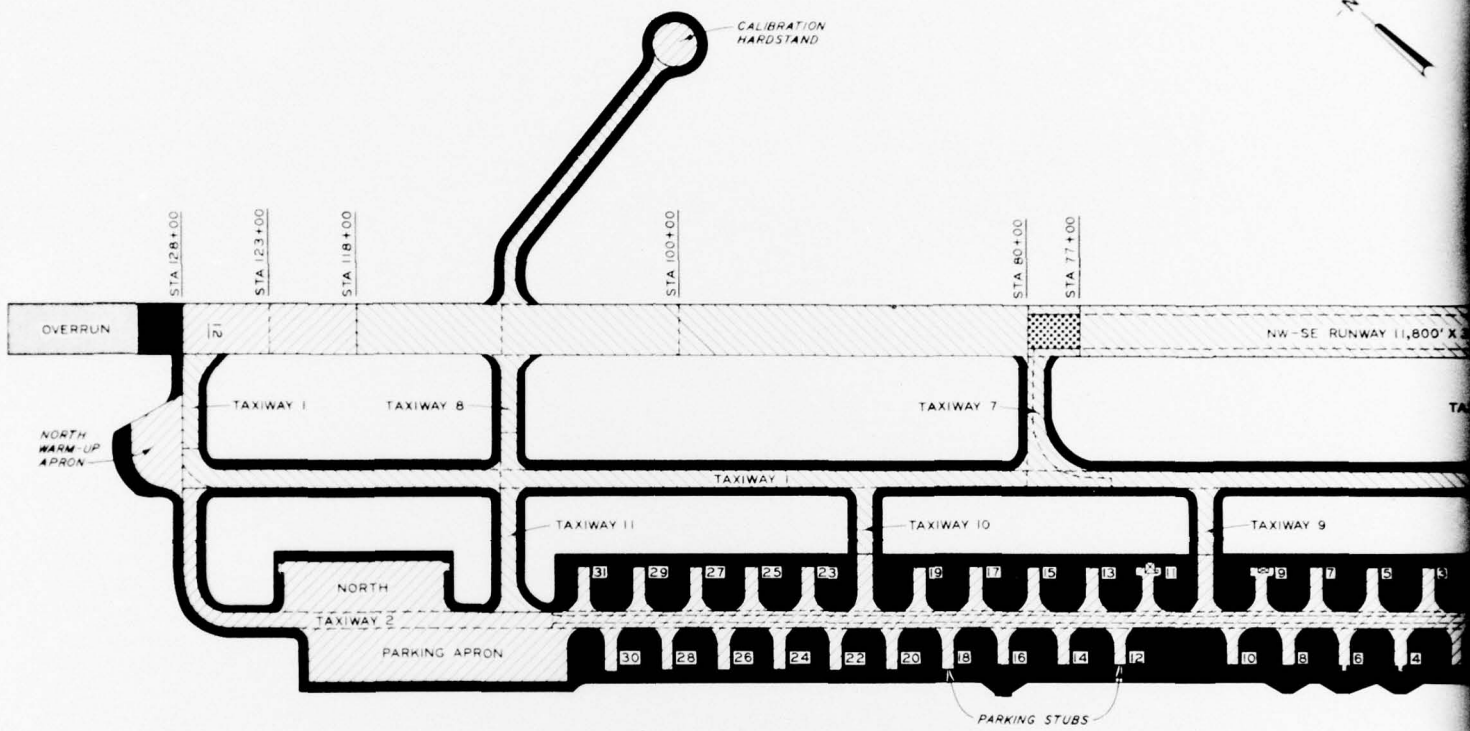
VICINITY MAP
SCALE IN MILES

20 0 20 40



FEET
400 800

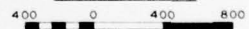
CASTLE AFB
AIRFIELD LAYOUT

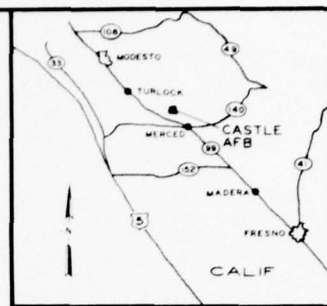


LEGEND

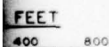
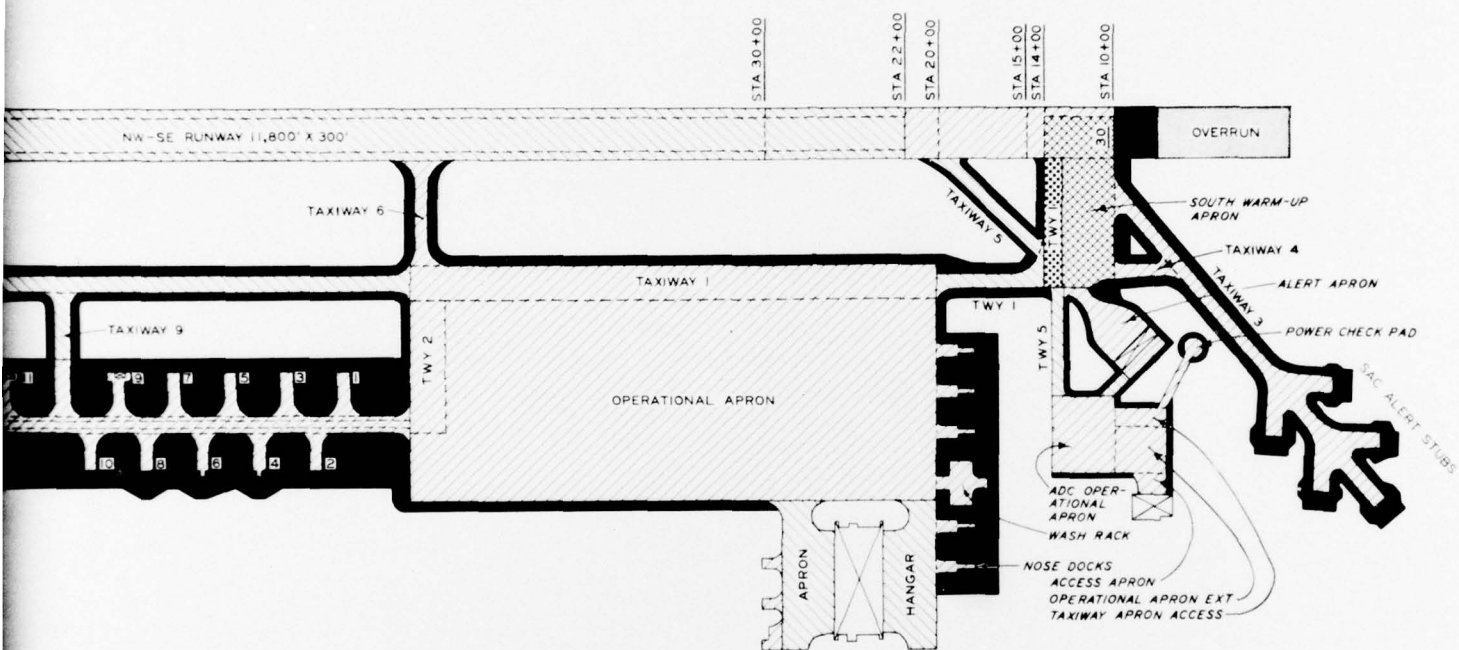
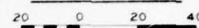
- PORTLAND CEMENT CONCRETE (PCC)
- ASPHALTIC CONCRETE (AC)
- ASPHALTIC CONCRETE OVER PORTLAND CEMENT CONCRETE
- PORTLAND CEMENT CONCRETE OVER PORTLAND CEMENT CONCRETE
- DOUBLE BITUMINOUS SURFACE TREATMENT (DBST)
- BLAST PAVEMENT (AC-NON TRAFFIC)

SCALE IN FEET





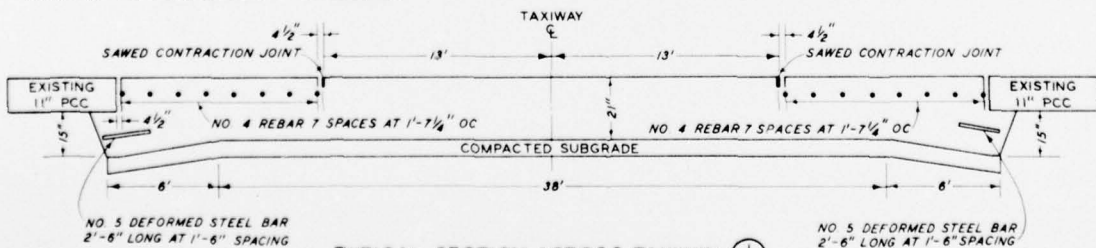
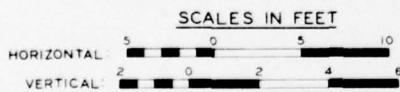
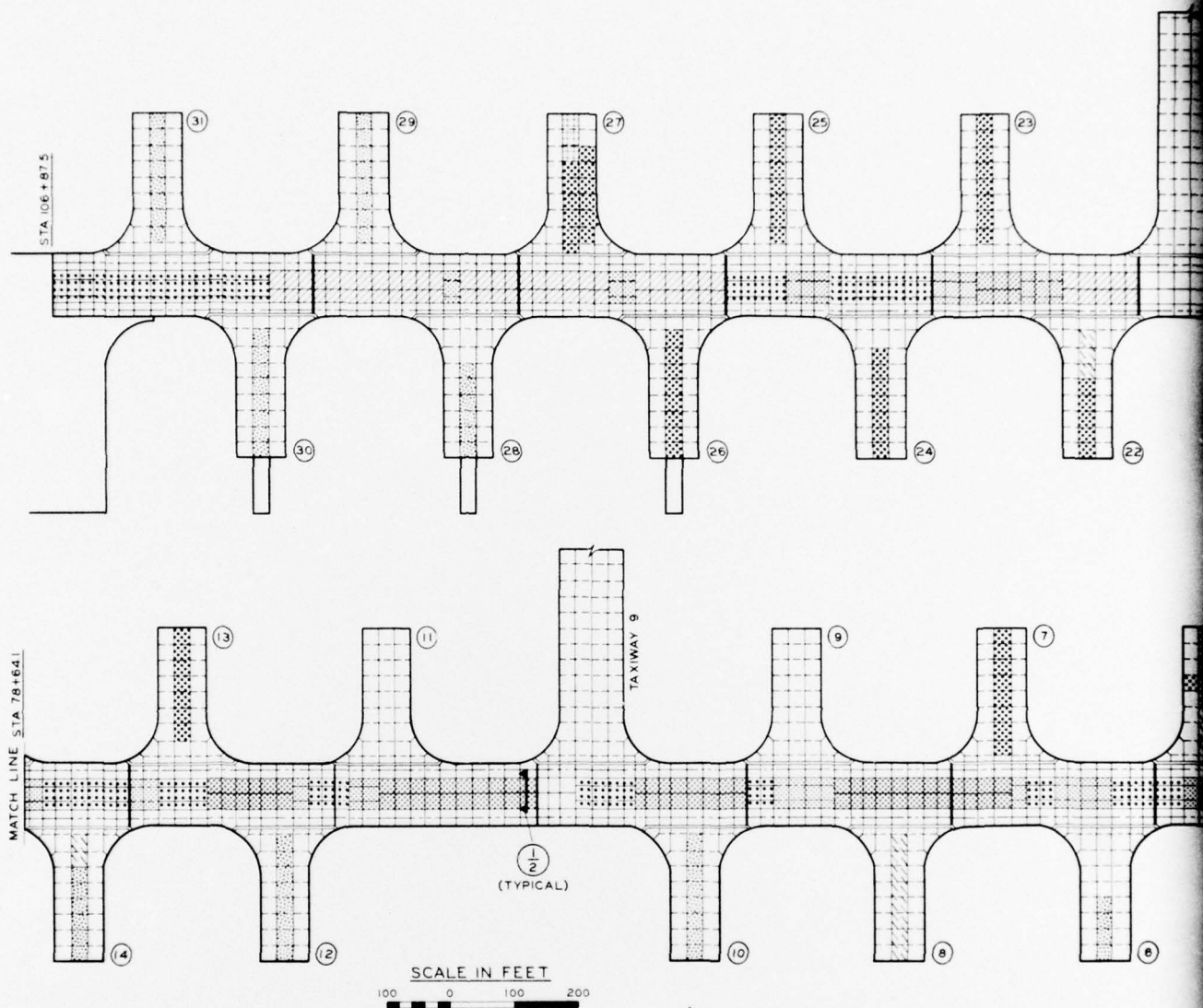
VICINITY MAP
SCALE IN MILES



CASTLE AFB
PAVEMENT PLAN

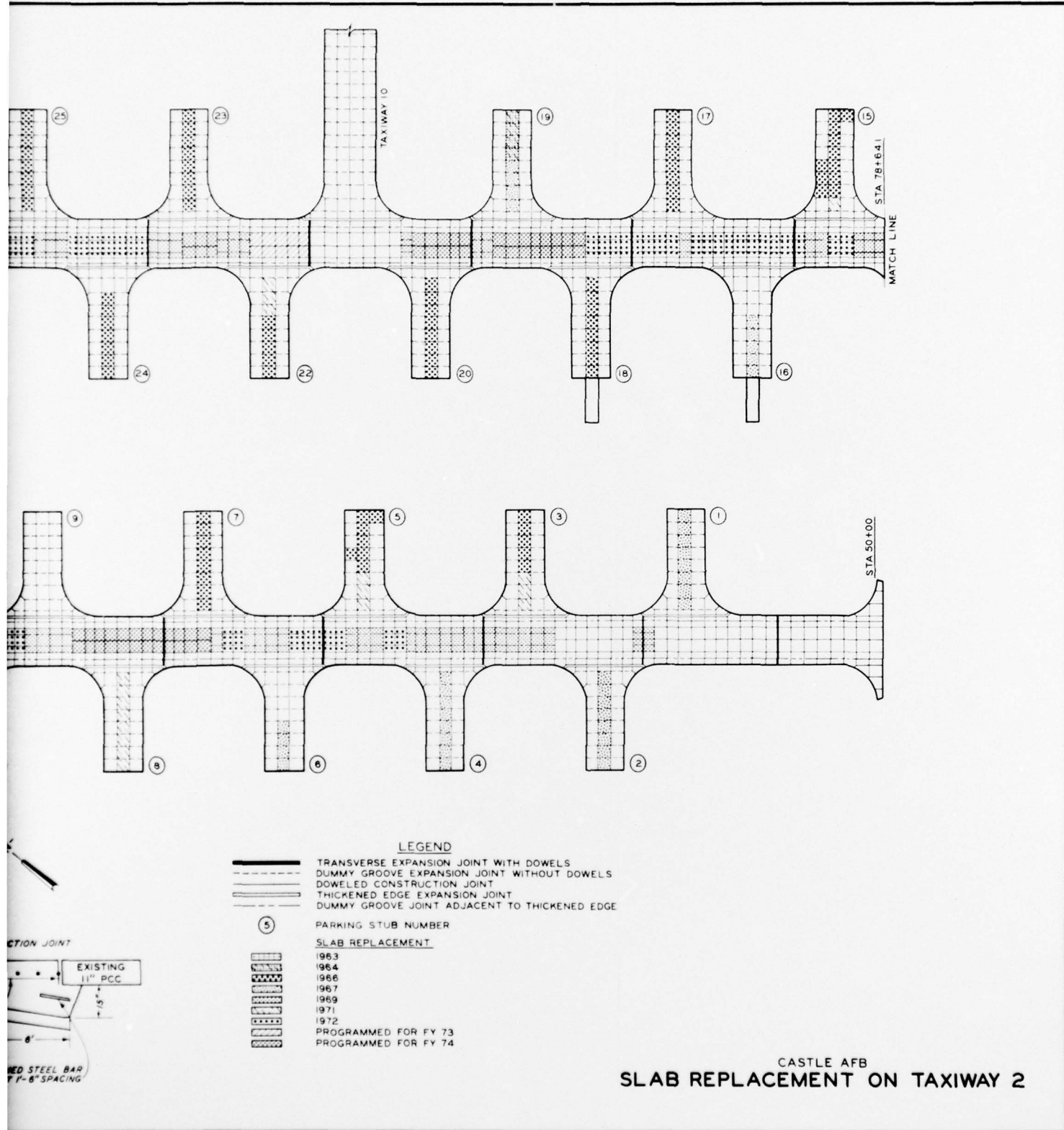
PLATE 2

2



TYPICAL SECTION ACROSS TAXIWAY (1/2)

TRANSVERSE DUMMY	1963
DOWELS	1964
THICKENED DUMMY	1966
	1967
	1969
	1971
	1972
	PROGRAM
	PROGRAM



Appendix A

CAFV Annual Pavement Maintenance Plan

Facility No.	Pavement		Year Constructed	Existing Condition	Maintenance and Repair History	Present or Proposed Maintenance and Repair
	Description	Type				
1	11001 Runway, primary, installed sta 22+00 to 118+00 9600 by 300 ft	Flexible heavy 111-17	1954 and 1955	Satisfactory	Heater placed and overlaid center portion, 1969; sta 22+00 to 50+00, sta 77+00 to 118+00	Heater placed, 1973; resurface sta 22+00 to 50+00, 1973, CTL 33-3
2	11004 Runway, primary, installed sta 10+00 to 22+00 1200 by 300 ft	Rigid heavy	1955	Satisfactory	Joint seal, 1965; derubber, 1966-69, 1970-72	Derubber and joint seal, 1973-77
3	11003 Runway, primary, installed sta 118+00 to 128+00 1000 by 300 ft	Rigid heavy	1955	Satisfactory	Joint seal, 1964, 1969; derubber, 1968-72	Derubber and joint seal 1973-77
4	11017 Taxiway, parallel, primary from approach end, SE runway, to sta 20+00	Flexible heavy	1955	Satisfactory	Surface seal, 1969; new surface course center, 30 ft, 30 by 700 ft, 1969	Slurry seal, 1973
5	11017 Taxiway, parallel, primary from sta 50+00 to 118+00	Flexible heavy	1955	Satisfactory	Surface seal, 1969; heater plane and overlay center 30 ft, sta 50+00 to 88+00, 1969	Slurry seal, 1974
6	11017 Taxiway, parallel, primary from sta 110+00 to NW end of runway	Flexible heavy	1955	Satisfactory	Center 24 ft replaced, 1965; surface seal, 1969	Slurry seal, 1973; heater plane and overlay, 1974
7	11032 Apron (ADC alert)	Rigid heavy	1954 and 1955	Satisfactory	Joint seal, 1961, 1964, 1968, and 1972	Repair 1973; joint seal, 1974-76
8	11032/11017 Apron and taxiway, SAC alert complex	Rigid heavy	1959	Satisfactory	Joint seal, 1964, 1969, and 1971; patching, 1971-72	Joint seal, 1974; minor patching, 1973
9	11017 Taxiways at sta 80+00 and 110+00 and the east half of taxiways at sta 70+00 to 90+00	Flexible heavy	1955	Satisfactory	Surface seal, 1969; minor patching, 1971-72	Surface seal, 1974
10	11017 Taxiway at sta 30+00 and taxiway from north parking apron to north warm-up pad	Rigid heavy	1956 and 1957	Satisfactory	Joint seal, 1961, 1966, and 1969; minor repair 1972	Joint seal, 1974
11	11017 Taxiway, stub parking, and west half of taxiways at sta 70+00 to 90+00	Rigid medium	1951	Unsatisfactory	Joint seal, 1958 and 1969; replaced 4390-sq yd PCC pavement 65; 2285 sq yd, 1967, pavement 3; 356 sq yd, 1970, pavement 5; 219 sq yd, 1971-72, CTL 11-2	CTL 15-3, replace 7322 sq yd, 1973; replace 7532 sq yd, 1974, CTL 14-4
12	11017 Taxiways, ADC apron access and ADC alert taxiway	Flexible medium	1954 and 1955	Satisfactory	None	Resurface, 1973-74
13	11017 Taxiway, main apron access	Rigid heavy	1955	Satisfactory	Joint seal, 1961, 1969; replaced 486 sq yd, 1967	Joint seal, 1974
14	11032 Apron, main base	Rigid heavy	1955	Satisfactory	Joint seal, 1964, 1970	Joint seal, 1974
15	11032 Apron, north parking	Rigid heavy	1956	Satisfactory	Joint seal, 1962, 1970	Joint seal, 1974
16	11032 Parking stubs (30)	Rigid medium	1951	Unsatisfactory	Joint seal, 1958; replaced 7971 sq yd, 1967; joint seal new wild cracks annually; replaced 6150 sq yd, 1970; replaced 1389 sq yd, 1972, CTL 17-2	Replace 417-sq yd PCC, 1973, and 625-sq yd PCC, 1974
17	11032 Apron, ADC parking	Rigid heavy	1955 and 1956	Satisfactory	Joint seal, 1961, 1964, and 1968	Joint seal, 1972
18	11017 Taxiway, P-52, nose dock access (5)	Rigid heavy	1955	Satisfactory	Joint seal, 1965, 1971	Joint seal, 1972
19	11017 Taxiway, P-135, nose dock access (3)	Rigid heavy	1957	Satisfactory	Joint seal, 1969, 1970	Joint seal, 1973
20	11017 Taxiway, hangar access, maintenance	Flexible heavy	1954	Satisfactory	None	Surface seal, 1976
21	11026 Peds. power check	Rigid heavy	1955	Satisfactory	Joint seal, 1964; replaced 139 sq yd, 1967; joint seal SE end, 1965, NW end, 1969	Replace 275 sq yd, 1973
22	11006 Overrun	Flexible heavy	1955 and 1959	Satisfactory	Seal, 1969	Surface seal, 1976
23	11008 Shoulder stabilization	Flexible	1955 to 1962	Satisfactory	Applied Golden Bear Reclamite seal, 1962; resurfaced 3300 sq yd and seal coat 572,000 sq yd, 1965	Surface seal, 1973
24	11017/11026 Taxiway and pad, engine ramp, ADC	Rigid heavy	1959	Satisfactory	1968	Slab repair and joint seal, 1973
25	11017 Taxiway, Compass Rose	Flexible heavy	1954 and 1955	Satisfactory	None	Surface seal, 1974
26	11093 Pds. Compass Rose	Rigid heavy	1954 and 1955	Satisfactory	Joint seal, 1966	Slab repair and joint seal, 1973
27	11099 Washrack	Rigid heavy	1955	Unsatisfactory	Joint seal, 1967, 1969; repaired piping, 1972	Joint seal, 1973; cracked slab repair, 1974; foundation repair, 1974